

Spring 1-1-2007

## Iowa Seed & Biosafety News (Vol. 23, No. 2)

Iowa State University Seed Science Center

Follow this and additional works at: <http://lib.dr.iastate.edu/iaseedbiosafety>



Part of the [Agriculture Commons](#), [Biotechnology Commons](#), and the [Plant Sciences Commons](#)

---

### Recommended Citation

Iowa State University Seed Science Center, "Iowa Seed & Biosafety News (Vol. 23, No. 2)" (2007). *Iowa Seed & Biosafety News*. 5.  
<http://lib.dr.iastate.edu/iaseedbiosafety/5>

This Book is brought to you for free and open access by the Iowa State University Magazines and News at Iowa State University Digital Repository. It has been accepted for inclusion in Iowa Seed & Biosafety News by an authorized administrator of Iowa State University Digital Repository. For more information, please contact [digirep@iastate.edu](mailto:digirep@iastate.edu).

# IOWA SEED & BIOSAFETY

Vol. 23 No. 2 | Spring 2007

THE NEWSLETTER OF THE SEED SCIENCE CENTER AND BIOSAFETY INSTITUTE FOR GENETICALLY MODIFIED AGRICULTURAL PRODUCTS

## BIGMAP HOSTS FOURTH ANNUAL SYMPOSIUM

by Regina Hendrickson

Over 100 scientists and members of academia and industry traveled to Ames, Iowa, April 18, 2007, for the Fourth Annual BIGMAP symposium. Held at the Gateway Hotel and Conference Center, the symposium, titled "Understanding the Risks and Benefits of Genetically Modified Agricultural Products," provided attendees a forum to discuss future biosafety challenges and the opportunities of biotech crops.

Topics discussed at the symposium, which was co-sponsored by the Plant Sciences Institute at Iowa State, included current perspectives on the regulation, risks, and benefits of genetically modified agricultural products and assessing global information needs.

"Biotechnology is a powerful technology," said BIGMAP Director Manjit Misra during his opening remarks. "As the power of the technology increases, the need to assess impacts and potential risk becomes greater. We need to be careful in managing the technology and the risks of genetically modified products."

Sally McCammon, Office of Science, Biotechnology Regulatory Services, USDA, talked about the challenges and opportunities in biotech regulation. She discussed the three major agencies that regulate biotech products and the ways that science and information impact statutes, regulations, decisions, and guidance.

Alan McHughen, University of California-Riverside, approached the subject of ag biotech regulation, risks, and benefits by asking the question, "Who represents the public interest?" McHughen stated that public perceptions of biotech crops are often based on invalid assumptions, failure to apply critical thinking, and lack of context. "There is a tremendous need for basic science literacy in the public," he said. "People have invalid assumptions because they don't have the training." McHughen stressed the need for citizens to have access to accurate information so that they can make informed decisions.

Felicia Wu, assistant professor, University of Pittsburgh, discussed mycotoxin regulations and the health effects and standards for fumonisin and aflatoxin. Wu said that though the science linking Bt corn, mycotoxin reduction, and health benefits is still nascent, Bt use may be one solution towards reducing the adverse impacts of mycotoxins because of its pest protection, which reduces fungal contamination. Wu said that although fumonisin reduction with Bt has been proven worldwide, aflatoxin reduction has had mixed success. "Although this benefit is unlikely to directly affect regulatory decision making in the near future, the indirect effects could be important," said Wu, "Especially to countries that suffer from severe mycotoxin problems."



### INSIDE THIS ISSUE

BIGMAP Hosts International Expert Consultation .....	2
Harries/Cortes Facilitate Agreements to Promote Quality Seed in Southern Africa .....	3
Mycotoxin Regulations and Bt Corn Benefits .....	4
Misra Outstanding Scholar Named ...	5
Seed Science Center Co-Hosts ISA Convention .....	5
Biotech Issues Discussed at Farmer-to-Farmer Roundtable .....	6
What is Risk Communication? .....	7
"Seed Cy" Makes Debut at Veishea ...	8
Seed Science Center Profiles .....	9
Genetically Engineered Plants: Will They Make it Into the Fields? ...	10
2007 Seed Conditioning and Quality Workshops. ....	11



### NEWSLETTER DISTRIBUTION

If you would like to receive your copy of *Iowa Seed & Biosafety* electronically, remove your name from the distribution list, or change the way that your copy of the newsletter is addressed, please send us an Email at [seedsci@iastate.edu](mailto:seedsci@iastate.edu).

*Iowa State University does not discriminate on the basis of race, color, age, religion, national origin, sexual orientation, gender identity, sex, marital status, disability, or status as a U.S. Veteran. Inquiries can be directed to the Director of Equal Opportunity and Diversity, 3680 Beardshear Hall, 515-294-7612.*



**IOWA STATE UNIVERSITY  
SEED SCIENCE CENTER  
BIOSAFETY INSTITUTE FOR  
GENETICALLY MODIFIED  
AGRICULTURAL PRODUCTS**

AMES, IOWA, 50011-3228

*Phone*

(515) 294-6821

*Fax*

(515) 294-2014

*Email*

seedsci@iastate.edu

*Internet SSC*

www.seeds.iastate.edu

*Internet BIGMAP*

www.bigmap.iastate.edu

**FACULTY AND STAFF**

*Director*

Manjit Misra

*Seed Physiology*

Susana Goggi

*Seed Pathology*

Gary Munkvold

*Int'l Seed Programs*

Joe Cortes

*Seed Testing*

Mike Stahr

*Seed Conditioning*

Alan Gaul

*Computer Technology*

Yuh-Yuan Shyy

*Molecular QA*

Satish Rai

*Risk Assessment (Plants)*

Jeff Wolt

*Risk Assessment (Animals)*

Scott Hurd

*Editorial Staff*

Paul Christensen

Regina Hendrickson

*Biosafety Regulatory Prog.*

Adelaida Harries

*Tech. and Bus. Curriculum*

Paul Christensen

*Center Admin Assistant*

Connie Sandve

*BIGMAP Admin Assistant*

Melissa Swanson



## BIGMAP HOSTS INTERNATIONAL EXPERT CONSULTATION

*by Regina Hendrickson*

**T**wenty-six participants from around the world attended the Proposed Knowledge Base on Genetically Modified Agricultural Products Expert Consultation held April 19-20, 2007, in the High Tech Room of the Seed Science Center at Iowa State University.

Scientists and industry leaders from Tanzania, Kenya, Brazil, China, Argentina, Canada, Italy, the United Kingdom, and the United States took part in the event, which consisted of a series of open discussions directed towards assessing the value of developing a comprehensive Knowledge Base (KB) on Genetically Modified Agricultural Products (GMAPs). Focusing on transformed plants and animals, the proposed database would provide information about the expressed traits and products of GMAPs. It would also serve as a tool to communicate knowledge about the safety and utility of GMAPs to scientists, breeders, regulators, universities, industry, and the public.

Presentations during the two-day event were given by Philippe Leblond, Secretariat of the Convention on Biological Diversity; David Carlander, European Food Safety Authority; Peter Scott, Iowa State consultant and former director, Programme Development, CAB International; Adelaida Harries, BIGMAP scientist; and Yuh-Yuan Shyy, BIGMAP scientist.

During the consultation, participants discussed coverage, components, and processes for developing, sustaining, and accessing the proposed Knowledge Base. They examined existing GMO databases and discussed ways that a variety of clients utilize the information these databases provide.

"The Expert Consultation developed an authoritative Knowledge Base that will facilitate awareness and understanding of genetic manipulation in relation to agricultural production, quality, and food security, while recognizing the need for appropriate safeguards in its utilization," said Adelaida Harries.

"BIGMAP is dedicated to providing information to help safeguard consumers and the environment," said BIGMAP Director Manjit Misra. "This consultation provided an opportunity for persons from all over the world to come together to discuss ways that the Center can provide a dynamic source of independent science-based information in a timely manner to those who need it the most."





# HARRIES, CORTES FACILITATE AGREEMENTS TO PROMOTE QUALITY SEED IN SOUTHERN AFRICA

by Sabrina Shields-Cook

Joe Cortes and Adelaida Harries, scientists at the Iowa State University Seed Science Center, recently facilitated technical agreements between the 14 member countries of the Southern African Development Community (SADC) to improve seed policies and regulations and to reduce seed trade barriers in the region. The ultimate goal of their project is to help African farmers make a living off their land by giving them access to the best seed varieties available.

"Farmers in Africa are not just looking to their land for something to eat, they are looking for something they can profit from—like farmers here in Iowa," said Cortes. "With an increasing amount of U.S. corn being used for biofuels, there will be less corn sent to Africa for food. It is critical that African farmers produce more—not only for food security, but to make a living."

With funding from the United States Agency for International Development (USAID) and through the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Cortes and Harries worked with the 14 member countries of the SADC to identify issues that were impeding the acquisition of new seed varieties and limiting trade in the region.

"Africa is very different from the U.S.," explained Cortes. "In the U.S., seed companies make decisions about which varieties to release based on their own testing. In Africa, they have a government variety release system. The government of each individual country must test and approve or reject new seed varieties in a process that takes three years."

Governments often don't have the resources to do the variety testing and

it takes a long time for a variety to be approved for commercialization; thus, farmers' access to new varieties is delayed. To resolve this issue, SADC has proposed that the 14 countries act as a trading block with the understanding that if a new seed variety was tested and approved in two countries, it could be marketed in any of the 14 countries.

Cortes and Harries also suggested that the governments provide accreditation to individuals, testing labs, or organizations to give them the authority to conduct field inspections and seed tests on behalf of the government as part of the seed certification process. As a result of the efforts of Cortes and Harries' team, the Permanent Secretaries of the 14 member countries of the SADC have endorsed these agreements, including the harmonization of all field and seed laboratory standards.

A science-based quarantine pest list for the 17 crops produced in the region has also been established, eliminating many pathogens that did not need to be on the quarantine list. In addition, Cortes and Harries developed a Seed Import/Export manual template which the 14 countries are currently using to develop their own Seed Import/Export manuals.



"This is important because each country has control over their own manual—they are the process owners," said Harries. "Our next step is to work on implementation [of the manuals] at a national level with each individual country."

Since the agreements standardize regulations for all 14 countries, it is expected that they will significantly reduce time-consuming administrative procedures that have impeded both the acceptance of new seed varieties and the ease of trade in the region. This will also facilitate seed trade for Iowa and U.S.-based seed companies in the 14 countries.

The 14 Permanent Secretaries of the member countries of the SADC have endorsed all agreements and official signatures on the technical documents are expected in the summer of 2007.

*Cortes and Harries have facilitated more than 10 workshops in southern Africa over the past two years. They will return to Africa several times in 2007 to continue working on this project.*



Above: Adelaida Harries (center) poses with representatives from 17 countries following a workshop that she helped to facilitate in West Africa.



## COMMENTARY: MYCOTOXIN REGULATIONS AND BT CORN BENEFITS

By Gary Munkvold

Felecia Wu, an economist from the University of Pittsburgh, gave an interesting presentation at the BIGMAP symposium held at Iowa State University recently. Wu discussed the reduced risk of mycotoxins in grain from Bt corn hybrids, the economic impacts of mycotoxins, and how regulations on mycotoxins and transgenic crops affect international trade.

Mycotoxins in corn are detrimental to animal and human health. Fumonisin, the most common corn mycotoxin, cause fatal diseases in some livestock species and are associated with serious human health problems in areas where corn is a large part of the diet. Mycotoxins occur in corn when the kernels are infected by certain fungi, especially *Aspergillus flavus* and several species of *Fusarium*. The hazards of mycotoxins have been recognized fairly recently, and many countries have responded by establishing standards or regulations that discourage or restrict the sale or use of corn containing mycotoxins. However, the standards set by different countries are quite variable and often revised. There is a need to harmonize international standards, but little agreement on what constitutes a safe level. The European Union currently has the world's most stringent standards for aflatoxins. Corn imported into Europe must contain no more than 4 parts per billion of aflatoxin. Countries that wish to export corn to Europe must meet this standard and therefore keep their most highly contaminated corn for domestic

use. Sadly, exporting countries such as China have populations that are much more at risk from aflatoxin poisoning than Europeans, due to the higher frequency of hepatitis infection in China. Now, the EU is planning to implement standards for other mycotoxins that are considerably more stringent than those used in the U.S. This could have a significant impact on international trade in corn grain, especially if the EU standards are adopted by other countries.

Against this backdrop, the most effective tool for reducing mycotoxin levels in corn—the use of Bt hybrids—continues to be rejected by most EU countries.

Since 1999, research has consistently shown that grain from Bt corn hybrids typically has lower levels of mycotoxins, especially fumonisins, compared to grain from conventional corn hybrids. Infection by mycotoxin-producing fungi is promoted by insect feeding, and some of these fungi are dependent on insect feeding for the majority of their infection. So, protecting the corn from insect feeding reduces the risk of mycotoxin accumulation. The best management strategy available for mycotoxins is to use corn hybrids that have transgenic insect protection combined with partial resistance to mycotoxin-producing fungi. Using this strategy greatly increases the chances that grain can meet stringent mycotoxin standards. Wu estimates that, currently, mycotoxin reductions through the use of Bt corn are saving U.S. growers about \$30 million each year, primarily by allowing access to markets with low mycotoxin

standards. But GMO regulations stand in the way of the potentially much larger benefit that could be experienced globally through the use of Bt corn.

There may be change on the horizon as regulatory agencies in different nations begin to consider not only adoption risks, but also risks of non-adoption and benefits, when devising new biotechnology regulations. In this case, there is a convincing argument for a more open policy toward Bt corn, where the benefits outweigh the risks. Especially human health risks which, while frequently hypothesized, have not been confirmed.

*Munkvold, an internationally recognized expert in seed pathology, is an associate professor of Plant Pathology and a Seed Science Endowed Chair at Iowa State University.*



Above: European corn borer injury (ECB) leading to infection from mycotoxin-producing fungi such as *Fusarium verticillioides* (left) and *Aspergillus flavus* (right). Bt hybrids are resistant to ECB and do not suffer this type of damage.





## MISRA OUTSTANDING SEED SCHOLAR NAMED

**N**icole Schneider of Stuart, Iowa, was named the inaugural recipient of the "Manjit Misra Outstanding Senior Scholarship in Seed Science" November 14th at the Iowa Seed Association (ISA) Annual Convention held at the Gateway Center in Ames.

The scholarship, named for Seed Science Center Director Manjit Misra, was made possible through a donation by Seed Science Center Advisory Board Chair Bruce Maunder. "The award recognizes Dr. Misra's contribution to the seed industry, seed science, and the success of the Seed Science Center," said Maunder. "The recipient must exhibit exemplary character, hold promise for a career in seed science, achieve a high academic record, and demonstrate leadership in student activities and community service."

Schneider, an Iowa State Agronomy student specializing in plant breeding and biotechnology, gained an appreciation for seeds and the seed industry after completing three summer internships with Pioneer Hi-Bred International. Schneider recently graduated from Iowa State and is currently employed as a research associate for Pioneer.

The Outstanding Senior Scholarship in Seed Science recipient is selected from students earning ISA scholarships. Recipients are recognized at ISA Annual Conventions.

## SEED SCIENCE CENTER CO-HOSTS IOWA SEED ASSOCIATION CONVENTION

by Regina Hendrickson

"Iowa Seed in a Global Market" was the title of the 104th Iowa Seed Association (ISA) Annual Convention held at the Gateway Center in Ames, Iowa, on November 13-14, 2006.

Co-sponsored by the Seed Science Center, over 100 participants from academia and industry attended the event.

Topics discussed on the opening day of the convention included developing, channeling, and managing SKUs. Speakers included John Jansen, Monsanto; Ben Kaehler, Dow AgroSciences; Clayton Becker, Syngenta; Eric Von Muenster, Pioneer Hi-Bred International; Paul Kjolhaug, Mayer Seed; and Lou Schweigert, Gro Alliance. During their presentations, Becker discussed the impact of new biotech research on future product lineups and Von Muenster talked about computer-based warehouse management systems and their potential to make seed handling more effective.

Ten seed science students were awarded \$1,000 scholarships during the President's Breakfast held on the second day of the convention. Graduate Endowment Scholarship donors were also recognized and Seed Science Center Advisory Board Chair Bruce Maunder announced the 2006 Manjit Misra Outstanding Senior Scholarship in Seed Science recipient. Seed Science Director Manjit Misra followed the awards with an introduction of the new ISU Global Master's Degree in Seed Technology and Business. Iowa State University Associate Provost for Faculty Advancement and Diversity Susan Carlson gave closing remarks for the breakfast.

Monte Shaw, Iowa Renewable Fuels Association, led the second general session with an overview of Iowa's ethanol and biodiesel industries with his talk titled "Fueling Iowa's Future." Iowa State faculty updated participants on industry-related issues in concurrent workshops on "Traceability," by Charles Hurburgh, Agricultural and Biosystems Engineering; "Logistics Cost in Seed Operations," by Bobby Martens, Logistics, Operations, and Management Information Systems; and "Germination Testing," by Mike Stahr, Seed Science Center.

Iowa Secretary of Agriculture Bill Northey served as the featured speaker at the President's Luncheon.

In the final session of the convention, Robin Prusiner, state entomologist for the Iowa Department of Agriculture and Land Stewardship; Andy LaVigne, president and CEO of the American Seed Trade Association; and Mike Gumina, vice president of Supply Management at Pioneer Hi-Bred International discussed seed regulation from state, national, and international perspectives.



**Left:** Dale Miksch (left), Iowa Seed Association Honorary Member Award recipient, takes part in a germination testing workshop during the ISA Annual Convention.

**Right:** (From left) Manjit Misra, director, Seed Science Center; Andy LaVigne, president, American Seed Trade Association; and Bruce Maunder, chair, Seed Science Center Advisory Board; visit during a poster session.

## BIGMAP SYMPOSIUM

(continued from page 1)



Alan Raybould of Syngenta was also on the slate of speakers for the morning session. Raybould spoke on the topic of systematically assessing the risk of increased weediness in GMO crops.

"Global Informational Needs," was the topic of the symposium's afternoon session. Speakers included Moises Burachik, Biotechnology Office, Ministry of Economy and Production, Argentina; Quentin Kubicek, biotechnology consultant; and Norah Olembo, executive director of the African Biotechnology Stakeholders Forum (ABSF).

Burachik discussed the risks and benefits of GMO crops as they relate to the environment, human welfare, and trade issues and regulations.

Kubicek shared his experiences with those involved with biotech crops in Guatemala. He stressed the need for education on the science of risk management. "They have a good economic knowledge of how to grow the crop, how to manage it," he said. But Kubicek added, "They need sources of information and guidance."

Olembo said that she believes that biotech crops promise to increase the productivity of poor farmers in the developing world, especially those in Sub-Saharan regions. "There has been very keen interest in getting information on biotechnology the last 10 years or so," she said. Olembo said that the ABSF is working to provide a platform in Africa for sharing, debating, and understanding GMOs. For more information on the Fourth Annual BIGMAP symposium, visit: [www.bigmap.iastate.edu](http://www.bigmap.iastate.edu).

## BIOTECH ISSUES DISCUSSED AT FARMER-TO-FARMER GLOBAL ROUNDTABLE

by Regina Hendrickson

From a cotton grower hailing from Burkina Faso, West Africa, to a wheat farmer from North Dakota, twenty-two farmers representing 14 countries came together October 19, 2006, at the Farmer-to Farmer Global Roundtable held in Des Moines, Iowa, to discuss the challenges and future of biotechnology in agriculture.

IFSS Director Manjit Misra moderated the one-day event, held in conjunction with the 2006 World Food Prize 20th Anniversary Celebration and International Symposium at the Marriott Hotel.

The roundtable, hosted by Truth About Trade & Technology in cooperation with the World Food Prize Federation, was attended by farmers from Argentina, Brazil, Canada, France, Italy, Spain, Romania, South Africa, Kenya, Burkina Faso, the Philippines, Australia, Mexico, and the United States.

As part of the event, participants shared their personal experiences with biotech crops. They were updated on the global adoption of biotechnology and analyzed the ways that biotechnology and free trade can help farmers to flourish in the 21st century as the "green revolution" turns into a "gene revolution."

The group also discussed ways to overcome barriers to new technology and the resources available to improve access to biotechnology.

Attendees agreed that misinformation about biotech crops is a problem. They cited the importance of countering misinformation by proactively promoting access to technology and building partnerships across borders.

"We believe that biotech crops will create the next wave of products for people around the world," said Bill Horan, an attendee from Rockwell City, Iowa.

"One common challenge is the ability to have a choice," said Reg Clause from Jefferson, Iowa. "It is about that choice. To make choices rationally and take advantage of what is there. Benefits can be measured. But we won't find them if we don't seek them."

"We farmers may be at the mercy of the weather—that's another thing that we talk about—but we don't have to be at the mercy of the governments that could care less about prosperity. If we recognize our common challenges, we may be able to band together to solve them," said Terry Wanzek, Truth About Trade & Technology board member and roundtable attendee.

Misra agreed. "Gathering together as a group can do a lot of good things," he said. "This roundtable discussion was a step in the right direction."

Dean Kleckner, Iowa farmer, former member of the World Food Prize Board of Advisors, and past president of the American Farm Bureau Federation said, "We will have won the battle when the consumer says, 'Because this is better for me, I'm going to buy this [biotech product].'"

For more information about the World Food Prize Symposium and Truth About Trade & Technology visit [www.worldfoodprize.org](http://www.worldfoodprize.org) and [www.truthabouttrade.org](http://www.truthabouttrade.org).





# WHAT IS RISK COMMUNICATION?

By Lulu Rodriguez

People have always been concerned about the activities, conditions, and materials that place their lives or well-being in peril, individually or collectively. Along with the growth in the number and complexity of risks has come a rapidly increasing need to communicate about these risks. Federal regulations have served to increase the volume of risk communication, but the arcane world of risk analysts, who work with decision trees and conditional probabilities, is very foreign to citizens who must decide whether it is safe, for example, to feed their families genetically modified food. Yet citizens are finding themselves drawn into that world with increasing regularity.

Because we live in a democracy built upon Jefferson's vision of an informed electorate, it is of great importance that risk information be made accessible to the citizenry. The noted risk expert M. Granger Morgan (1993) comments:

"Implicit in the process of risk analysis and management is the critical role of communication. If public bodies are to make good decisions about regulating potential hazards, citizens must be well informed. The alternative of entrusting policy to panels of experts working behind closed doors has proved a failure, both because the resulting policy may ignore important social considerations and because it may prove impossible to implement in the face of grass-roots resistance."

## Dimensions of Risk Communication

Because risk communication involves a wide variety of approaches and applications, it must be seen as a multi-dimensional construct. Krinsky and Plough (1988) identify five dimensions to the concept.

First, the nature of the *intentions* behind the risk message must be

considered. Messages can be essentially without goals or can have high expectations for specific outcomes. Second, the *content* of the risk message is highly variable, running from the more narrow focus on health and environmental messages to wide-ranging social concerns. Third, the *audience* for which the message is intended must also be considered: sometimes targeted, sometimes not. A fourth dimension involves the *source* of the information. Frequently this involves scientists and other technical experts, but it can also include a much broader source involving the media and citizen groups, for example. Finally, the *manner in which the message travels* should be considered. Risk messages can be specifically delivered through very restricted channels or can flow freely through society.

## Challenges for the Risk Communicator

Risk communication is a challenging endeavor. As researchers have considered the intricacies of risk communication they have identified a number of general tasks, difficulties and paradoxes that tend to face risk communicators. Fisher (1991) identifies three varieties of challenges.

First, the risk communicator must clearly define the objective of the campaign, embrace the importance of campaign evaluation and realize that no communication effort is ever completely effective. Then, it is critical to make a concerted effort to make the science of the risk assessment accessible to the audience. And finally, the perspective of the audience must be considered and entered into the whole risk equation because public reaction invariably becomes intertwined with the risk condition itself. To meet this third challenge, risk communicators must work more closely with the risk assessors and



risk managers that generate the initial constructs of the given risk.

One of the most important tasks is to establish credibility. Credibility can be hurt when the audience perceives the message to be inconsistent with the facts or inconsistent with previous messages, when the messenger has a reputation for deceit or when the expert sources appear incompetent or in disagreement. The audience's evaluation of the overall legitimacy of the risk issue also impacts credibility.

The task of the risk communicator is to transfer information from the expert sphere to the public sphere where it can be acted upon in a democratic fashion. This can prove to be a difficult task, given the gap between expert evaluation and public understanding of risk. Heaped on top of this complexity are the inherent difficulties surrounding public communication.

In spite of the difficulties, effective risk communication can be achieved. By understanding the audience, the nature of the risk at hand, and the goals of the communication campaign, it is possible to craft messages and launch dialogues that responsibly serve all parties involved.

*Lu Lu Rodriguez is an associate professor in the Greenlee School of Journalism and Communication at Iowa State University. Part 2 of Lulu Rodriguez's article on risk communication, "Risk Communication Models," will appear in the next issue of Iowa Seed & Biosafety.*

Fisher, A. (1991). Risk communication challenges. *Risk Analysis*, 11 (2), pp. 170-179.

Krinsky, S., and Plough, A. (1988). *Environmental Hazards: Communicating as a social process*. Dover, MA: Auburn House.

Morgan, M. G. (1993, July). Risk analysis and management, *Scientific American*, 269 (1), pp. 32-41.



# "SEED CY" MAKES DEBUT AT IOWA STATE'S VEISHEA, 150TH BIRTHDAY CELEBRATION

by Regina Hendrickson



Members of the Seed Science Center brought their own unique twist to this year's Iowa State University Veishea Celebration and 150th birthday kickoff on April 21, by pooling their resources and creative talents to create a Cy made entirely out of seeds.

"Seed Cy" was designed and produced by Seed Science Center students Hana Oaks and Leah Willger under the guidance of Seed Analyst Josie Kraft. To accomplish the task, the students experimented with several types of glue, painstakingly placing seeds on a template

one at a time by hand to get a desired color and textural effect. The students used 10 different types of seeds to construct Seed Cy including strawberry popcorn, yellow popcorn, soybeans, safflower, barley, pumpkin, sunflower, yellow dent corn, red garden beans, and cabbage seed.

Seed Cy took center stage of the Veishea tent co-sponsored by the Seed Science Center, the Institute for Food Safety and Security (IFSS), and BIGMAP. The tent, located on central campus, was part of a display coordinated by the College of Agriculture.

"Seed Cy definitely drew attention from the crowd. No matter if they were young or old, people would stop by the tent and just be amazed by him. It was really fun watching their reactions," said Alan Gaul, Seed Science Center assistant scientist and organizer of the event. "The students did an exceptional job of creating him. It was a lot of work."

Educational activities for all ages were also included in the display. They included: "From Quality Seeds to Safe Food," a pictorial journey offering viewers a brief history of the evolution of the Seed Science Center at Iowa State; "CSI: Cyclone Seed Identifier," a game inviting visitors to grab a handful of mystery seeds and earn a prize by identifying them by name; "Eat your Homework!" an exercise challenging participants to learn about the different types of edible seeds and then try them as a snack; and "So you want to be a Food Safety Expert?" a display designed by IFSS to teach youth and adults ways that scientists work to keep our food supply safe.

In addition to the activities, a cross section of soybean and corn sprouts and a vibratory seed counter, like those used by seed scientists, were also on display. Over 30 pounds of popcorn was also popped on site and served by Seed Science Center staff, students, and faculty members throughout the afternoon.

"Our display was a great success. We all came together and worked hard as a team to produce something that I think we were all very proud of," said Gaul.



Summer means workshops and shortcourses at Iowa State's Seed Science Center. Look for an overview of these events in the next issue of *Iowa Seed & Biosafety*.



Above: Hana Oaks (left) and Leah Willger (right) take time out from gluing seeds to a Seed Science Veishea display to pose for a photo.

## SEED TECHNOLOGY BUSINESS MASTER'S PROGRAM

The Seed Technology and Business Master's Program is still accepting applications for classes starting in late July 2007.

For additional information contact Paul Christensen at 515-294-8745, [intlcom@iastate.edu](mailto:intlcom@iastate.edu), or visit <http://www.seeds.iastate.edu>.

**Heather Hall**  
Graduate Student



Graduate student Heather Hall first came to the Seed Science Center in 2003 as an undergraduate research assistant for Agronomy Assistant Professor Susana Goggi. During that time, she also took part in research projects with Agronomy Graduate Assistants Mindy DeVries and Nate LeVan. Now working on her M.S. degree in Agronomy and Crop Physiology, Hall is studying late season frost damage in seed corn production with Goggi and Agronomy Professor Russ Mullen.

Although she has always had a love for agriculture, Hall says that she did not become interested in Agronomy until she was in high school, and did not acquire an interest in seeds until she came to Iowa State and began to work with DeVries. "That was when I fell in love with what I do," she said. "That is also when I decided that I needed a master's degree."

Hall, who hails from Mitchellville, Iowa, graduated from Iowa State in May '07 with a B.S. in Agronomy and Seed Science. Her parents are Leland and Brenda Hall and she has four siblings ranging in age from 23 to 2.

Hall is excited about her current research and believes that the experiences she has had at the Center have been valuable learning opportunities. "Dr. Goggi has always pushed me to excel. As an undergraduate I got to do some really cool things that not too many undergraduates get to do."

Hall hopes to work for a seed company after she graduates. When that day comes, what will Hall take with her as a result of her experiences at the Center? "A love for working with people who love their job and the people they work with. There aren't many places like the environment here at the Seed Science Center," she says.

**Moises Gonzalez**  
Graduate Student



Seed Science Center graduate student Moises Gonzalez was first introduced to agriculture as an FFA member in middle school. "I decided at that time that a career in agriculture would be my first choice for an education," he said.

Born and raised in Puerto Rico, Gonzalez earned a B.S. and M.S. degree in Agronomy from the University of Puerto Rico at Mayaguez. He later moved to Florida where he worked for the USDA for three years in sugarcane breeding. In 2006 Gonzalez came to ISU to pursue a Ph.D in Plant Breeding. His advisor is seed physiologist Susana Goggi.

Gonzalez's research focuses on two genes in maize that are involved in selective fertilization. In addition, he is studying a third gene that confers high levels of the amino acid methionine. Gonzalez is also researching a mechanism that could be used to protect plants in organic production from being fertilized with undesirable pollen, such as those from transgenic plants.

Gonzalez believes that research in the area of plant breeding is an important part of ag science. "We use the knowledge, not only in genetics but also in other areas, to develop better crops for humanity," he says.

According to Gonzalez, the advice and recommendations that Goggi and others at the Center have offered him have helped to improve the way he performs his research. "I really like the working atmosphere here in the Seed Science Center," he said. "Both the administrative and scientific staff are always available to assist me. It is a privilege to work for a well-recognized research and service entity like this."



## JONES SPEAKS AT SEED SCIENCE CENTER

Richard Jones, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) assistant director for Eastern and Central Africa, presented a seminar titled "Developing Viable Seed Systems in Africa," April 2, 2007, in the High Tech Room of the Seed Science Center.

Jones talked about the challenges of increasing consumer access, private sector capacity and capabilities, and market regionalization in Africa.

The seminar was sponsored by the Seed Science Center, BIGMAP, and the Institute for Food Safety and Security.

For more information about ICRISAT visit <http://www.icrisat.org>.



*Richard Jones, ICRISAT, shares his insights on African seed systems during a Seed Science Center seminar in April.*

### DID YOU KNOW?

**The Seed Laboratory located in the Iowa State University Seed Science Center tests over 40,000 seed samples from 300 species annually. In addition, it conducts seed health tests for over 250 seed pathogens.**

## GENETICALLY ENGINEERED PLANTS FOR THE BIOECONOMY: WILL THEY MAKE IT INTO THE FIELDS?

by Saharah Moon Chapotin

*Scientists are developing genetically engineered crops for the bioeconomy. But how can we ensure that these crops will find their way into the fields?*

We have been hearing a lot lately about biofuels, cellulosic ethanol and switchgrass, as part of a larger initiative to move away from a petroleum-based economy and towards a bioeconomy based on plant materials. The bioeconomy promises affordable renewable fuels and a chance to simultaneously reduce our dependence on foreign oil imports and limit our carbon emissions. Biorefineries could produce energy from plant biomass and also use plant materials in the production of plastics and chemical products, possibly without generating the environmentally harmful synthetic chemicals and waste products that usually accompany these manufacturing processes. Plants themselves could be made to produce valuable products such as pharmaceuticals and chemical precursors. The bioeconomy would create new markets for agricultural products and expand economic opportunities in rural America.

This all sounds so promising as to be almost utopian, but a number of studies have determined that replacing the current petroleum-based economy with a bioeconomy is within reach. Politics and economics notwithstanding, bioeconomy goals cannot be met without significant technological developments, such as those in biomass processing, biorefinery design, and feedstock enhancement.

Almost every projection for the bioeconomy assumes that genetically engineered plants will play a significant role in increasing agricultural productivity, and the research necessary for their development is well underway. At small start-ups, large companies, and government and university labs around the country, scientists are harnessing

modern molecular tools to develop new crops for the bioeconomy. For example, at a hearing of the House Agriculture Committee last June, the CEO of Ceres, Inc. described his company's efforts to develop high-yielding energy crops with improved processing characteristics and reduced input requirements.

But how long will it be before these crops are commercially available? In the 1980s, when genetically engineering plants became possible, the rapid and widespread adoption of new crops was expected. Yet twenty years later, many of the envisioned applications have not materialized, and most of the genetically engineered crops commercially available incorporate just two traits, insect resistance and herbicide tolerance. The delays in the deployment of new genetically engineered crops are attributed to a combination of complex regulatory procedures, opposition, and limited market acceptance. These factors have especially limited the ability of small companies and public researchers to deploy new crops, particularly those destined for small or niche markets, including crops not intended for food.

At BIGMAP, we are concerned with ensuring that the research activities intended to increase biomass productivity get translated into actual crops that farmers can plant in their fields. A successful bioeconomy would bring benefits to our environment, to national security and to our economy, but it cannot go forward without increased and enhanced biomass production and processing which will rely, in part, on genetically engineered feedstocks. An ongoing BIGMAP project aims to identify and outline potential regulatory and

safety issues that could arise with some of the envisioned crop-trait combinations. We hope to ease the deployment of safe and effective crops for the bioeconomy that are welcomed by consumers, environmentalists, and industry alike by encouraging and assisting crop developers to anticipate how their product will fare in the regulatory process and whether it will gain acceptance by the public and consumer and industry groups.

Many major genomics projects, public and private, continue to generate genes that have the potential to make novel contributions to the bioeconomy. BIGMAP's activities include early consideration of biosafety issues to help regulators, technology developers, and the public better understand and address questions of safety.

*Saharah Moon Chapotin is a former BIGMAP research associate in biotechnology policy, Washington, D.C. Chapotin is now an American Academy of Science Fellow with the United States Agency for International Development, Office of Science and Technology, Internal Research and Biotechnology Team.*





# IOWA STATE UNIVERSITY

## 2007 Seed Conditioning and Quality Workshops



### SEED CONDITIONING WORKSHOPS

The seed conditioning workshop series is intended to offer "hands on" training with typical seed conditioning machinery and a detailed review of various aspects of seed conditioning. Group size is generally limited to a maximum of 24 attendees per session. The workshop format is based on a series of classroom presentations and equipment demonstrations. The workshops are suitable for training new personnel or as a refresher course for more experienced operators.

### SEED TREATMENT

**Wednesday, June 27, through  
Thursday, June 28**

**FEE: \$175**

This workshop is intended for seed plant personnel requiring more detailed coverage of current seed treatment products, typical seed pests and pathogens, application equipment, and calibration procedures. Equipment presentations will include powder, slurry, and film coating technology, continuous and batch treating machinery, equipment calibration, and quality control methods. The program will include video sessions and live presentations by University personnel and company representatives. This session includes training required to meet current recertification requirements for the 2007 Iowa Commercial Pesticide Applicator program under Category 4 (Seed Treatment).

### SOYBEAN & SMALL GRAIN SEED CONDITIONING

**Monday, July 9, through  
Wednesday, July 11;  
Monday, July 30, through  
Wednesday August 1**

**FEE: \$210**

General "crop specific" workshop covering typical operations required for conditioning soybean seed with additional information related to edible beans, small grains, and select specialty crops.

### GRAVITY SEPARATION

**Tuesday, August 7  
Thursday, August 9**

**FEE: \$95**

Detailed review of the operation, adjustment, and effectiveness of the destoner and gravity table for removing foreign material and upgrading seed quality. The primary focus will be on typical seed corn and soybean separation issues with additional discussion regarding food grade applications.

### RESEARCH SEED CORN CONDITIONING

**Monday, August 13, through  
Thursday, August 16**

**FEE: \$280**

General workshop covering typical operations required for conditioning seed corn in small lot sizes typical of research stations, parent seed, and smaller foundation seed operations. Typical small scale conditioning and treating hardware will be available for demonstration and training. An optional tour of the ALMACO manufacturing facility will also be included for interested attendees.

### SEED QUALITY WORKSHOP

#### SEED CORN & SOYBEAN QUALITY EVALUATION

**August 22-23**

**FEE \$160**

The Quality Evaluation Workshop offers lecture and laboratory hands-on training for both corn and soybean seeds.

### REGISTER EARLY!

#### ONLINE

[www.ucs.iastate.edu](http://www.ucs.iastate.edu)

#### BY MAIL

Continuing and  
Distance Education  
102 Scheman Building  
Iowa State University  
Ames, IA 50011-1112

#### BY FAX

(515) 294-6223

### FOR MORE INFORMATION

Connie Sandve  
Iowa State University  
102A Seed Science Ctr.  
Ames, IA 50011-3228  
(515) 294-6821  
[csandve@iastate.edu](mailto:csandve@iastate.edu)

### SPONSORS

Seed Science Center,  
Seed Testing Laboratory,  
Agricultural and  
Biosystems Engineering,  
College of Agriculture/  
Plant Sciences Institute,  
and Iowa State  
University Extension



## ISU SEED WORKSHOP/SHORTCOURSE SCHEDULE FOR 2007

Workshop/Shortcourse Title	2007 Training Dates
Seed Treatment	June 27 - 28
Soybean & Small Grain Seed Conditioning	July 9 - 11 & July 30 - August 1
Gravity Separation	August 7 & August 9
Research Seed Corn Conditioning	August 13 - 16
Seed Corn/Soybean Quality Evaluation	August 22 - 23

For updates or more information about ISU seed workshops/shortcourses, visit [www.seeds.iastate.edu/seedtest/training](http://www.seeds.iastate.edu/seedtest/training) or Email [agaul@iastate.edu](mailto:agaul@iastate.edu).



IOWA STATE UNIVERSITY

Seed Science Center  
Ames, Iowa 50011-3228